



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,192	06/30/2003	Jason S. Katcha	GEMS8081.173	1191
27061	7590	12/01/2004	EXAMINER	
ZIOLKOWSKI PATENT SOLUTIONS GROUP, LLC (GEMS)			HO, ALLEN C	
14135 NORTH CEDARBURG ROAD			ART UNIT	
MEQUON, WI 53097			PAPER NUMBER	
			2882	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

90W

Office Action Summary

Application No.

10/604,192

Applicant(s)

KATCHA ET AL.

Examiner

Allen C. Ho

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-14, 18, 19 and 21-24 is/are rejected.
- 7) ☒ Claim(s) 5-7, 15-17 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 062003, 072003.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Paragraph [0025], line 15, "14" should be replaced by --17--.

Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, an inverter that includes a transformer which is connected to the at least one resonant circuit and the slip ring as claimed in claim 19 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a power generator as claimed in claim 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure

Art Unit: 2882

must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 3-7 are objected to because of the following informalities: Claims 3-7 recite the limitation "the at least one resonant circuit". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 recites the inverter includes a transformer. The specification discloses an inverter that comprises switches, but not transformer.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4, 8-10, 18, and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Steigerwald *et al.* (U. S. Patent No. 5,608,771).

With regard to claim 1, Steigerwald *et al.* disclosed an x-ray generator for a CT scanner, the generator comprising: a slip ring (50) to transfer power to a rotating high voltage (HV) tank (60); a rotatable x-ray tube (62) operationally connected to the slip ring to receive power from the HV tank and project x-rays toward a subject to be scanned; and a stationary inverter (56) to provide AC power to the slip ring to transference to the HV tank (column 1, lines 42-57).

With regard to claim 2, Steigerwald *et al.* disclosed the x-ray generator of claim 1, wherein the stationary inverter includes a number of power switches (Q1-Q4) arranged in an H-bridge configuration, the configuration having a pair of outputs such that at least one output is connected to a resonant circuit (58).

With regard to claim 3, Steigerwald *et al.* disclosed the x-ray generator of claim 2, wherein the resonant circuit is connected to the slip ring.

With regard to claim 4, Steigerwald *et al.* disclosed the x-ray generator of claim 3, wherein the resonant circuit includes a capacitor (C_s) and an inductor (L_r) connected in series.

Art Unit: 2882

With regard to claim 8, Steigerwald *et al.* disclosed a CT imager comprising: a rotatable gantry having an imaging bore disposed therethrough, and a stationary base supporting the gantry; a slip ring (50) disposed in the rotatable gantry and electrically connected to an x-ray tube (62) and an HV tank (60); and a power conditioner (56) external to the gantry to receive a DC voltage and generate an AC voltage waveform that is applied to the HV tank through the slip ring.

With regard to claim 9, Steigerwald *et al.* disclosed the CT imager of claim 8, further comprising a power distribution unit (55, 56) disposed in the stationary base and where the power conditioner is disposed in the PDU.

With regard to claim 10, Steigerwald *et al.* disclosed the CT imager of claim 8, wherein the power conditioner is positioned in the stationary base.

With regard to claims 18, 21, and 24, Steigerwald *et al.* disclosed a CT scanner comprising: a rotatable x-ray tube (62) and a rotatable HV tank (60); a slip ring (50) to transfer current to the HV tank; a stationary base having an inverter (56) to supply AC power to the slip ring for transference to the HV tank; and the inverter having at least one resonant circuit (58) connected to the slip ring.

With regard to claim 22, Steigerwald *et al.* disclosed the CT scanner of claim 18, having a power generator, which provides the 3 Φ AC input.

With regard to claim 23, Steigerwald *et al.* disclosed the CT scanner of claim 18, further comprising a power distribution unit (55, 56) having the inverter disposed therein.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald *et al.* (U. S. Patent No. 5,608,771) as applied to claim 8 above.

With regard to claim 11, Steigerwald *et al.* disclosed the CT imager of claim 8, wherein the power conditioner includes an inverter. However, Steigerwald *et al.* failed to teach that the inverter is configured to supply an approximate 20k - 1M Hz AC waveform to the slip ring.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to configure the inverter to supply an approximate 20k - 1M Hz AC waveform to the slip ring, since a person would be motivated to transform an AC voltage waveform into an appropriate voltage in the secondary winding.

With regard to claim 12, Steigerwald *et al.* disclosed the CT imager of claim 11, wherein the HV tank is configured to receive the AC waveform from the slip ring and transform the AC waveform to generate up to approximately 160 kV therefrom (electrons must be accelerated to voltage in the kV range to produce x-rays).

With regard to claim 13, Steigerwald *et al.* disclosed the CT imager of claim 11, further comprising at least one series resonant circuit (58) placed in line between an inverter output and the slip ring.

With regard to claim 14, Steigerwald *et al.* disclosed the CT imager of claim 13, wherein the at least one resonant circuit is configured to limit frequency content of current and voltage waveforms on the slip ring (a resonant circuit functions as a band-pass filter).

Allowable Subject Matter

11. Claims 5-7, 15-17, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- (1) Harada *et al.* (U. S. Patent No. 6,674,836 B2) disclosed an x-ray CT apparatus.
- (2) Tanaka (U. S. Patent No. 4,995,069) disclosed an x-ray tube apparatus.
- (3) Yamada *et al.* (U. S. Patent No. 4,969,171) disclosed a CAT scanner.
- (4) Beer (U. S. Patent No. 4,912,735) disclosed a power transfer apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

Art Unit: 2882

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen C. Ho
Patent Examiner
Art Unit 2882

26 November 2004